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Procedure for identifying renewal parts

1. Identify the type of panelboard (PB, PH, PM-L, EP, MP40, MP100, MP200, CDP, CHP/CHB, NFB) from the data found on the nameplate. Critical information includes:
   - Type of panelboard
   - Amperage rating of the main
   - Amperage rating of the neutral
   - Voltage
   - Type of service (phase/number of wires)
   - General order number
In the event that the nameplate is missing or unreadable, follow the procedure on Page 3.

2. Refer to the listing below and turn to the proper section in this renewal parts data to identify standard parts and components.

<table>
<thead>
<tr>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB</td>
<td>4</td>
</tr>
<tr>
<td>PH</td>
<td>5</td>
</tr>
<tr>
<td>PH-L, NFB</td>
<td>9</td>
</tr>
<tr>
<td>EP, ES</td>
<td>11</td>
</tr>
<tr>
<td>CDP, MP40, NFB</td>
<td>17</td>
</tr>
<tr>
<td>MP100, MP2, M50</td>
<td>21</td>
</tr>
<tr>
<td>Breaker cross-reference</td>
<td>23</td>
</tr>
<tr>
<td>Trim clamps</td>
<td>23</td>
</tr>
<tr>
<td>Trim locks</td>
<td>23</td>
</tr>
</tbody>
</table>

3. This book identifies those replacement parts that are most frequently ordered and that are readily available from stock. These parts can be ordered by style, part, or catalog number to speed up processing and delivery.

Distributor ordering instructions

1. Specify the item by catalog or part number.
2. Refer to Price List PL01400003E for pricing information. Discount Symbol CE9 applies.
3. Enter the order on VISTA entry point SUM or Q49.

Note: For MP40 retrofit kits shown on Page 19, enter the catalog number, list price, standard multiplier, and location SUM or Q49.

When ordering a new circuit breaker to add to an MP40 panelboard, the following options are available:
   - Take the required breaker from your stock (or order from W34) and order the connector kit on Page 19 from the Sumter plant.
   - Select the correct breaker retrofit kit on Page 19, which includes the breaker and connector kit in one package—one shipment and one invoice from the Sumter plant.

4. Selling Policy 25-000 applies.
5. If additional assistance is required, contact the Panelboard and Switchboard Aftermarket Product Center in Sumter, SC, at 803-481-6677.

Sumter plant services

All the parts and kits shown in this renewal parts will come from the Sumter plant. To extend the life of your existing equipment, the Sumter plant will:
   - Provide all new components
   - Manufacture per original specifications
   - Follow all UL® procedures
   - Provide full Eaton warranty

Services offered include:
   - Parts and kits for MP40 and MP100 panelboards
   - Retrofit kits for MP2 switchboard distribution sections
   - Connector kits for MP2 switchboard distribution sections
   - Upgrades to meet changing system
   - Requirements such as higher fault current and increased load
Procedure for identifying panelboard type

The nameplate could be located on the front or back of the deadfront cover. In the event that the nameplate is missing, it may still be possible to identify the panel type by the enclosure width, the ampere rating of the main device, and the branch devices from Table 1 below.

Table 1. Procedure for Identifying Panelboard Type—Dimensions in Inches (mm)

<table>
<thead>
<tr>
<th>Enclosure Width in Inches (mm)</th>
<th>Main Lug or Device Rating</th>
<th>Branch Breakers or Fusible Switches</th>
<th>Panelboard Type</th>
<th>Page Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.00 (381.0)</td>
<td>Up to 225A maximum</td>
<td>Are in two vertical cutouts measuring 7.00 inches (177.8 mm) from side to side and have either tan or gray breaker handles</td>
<td>PB</td>
<td>4, 5</td>
</tr>
<tr>
<td>21.00 (533.4)</td>
<td>Up to 400A maximum</td>
<td>Are in two vertical rows measuring 7.00 inches (177.8 mm) from side to side and have either tan or gray breaker handles</td>
<td>PB</td>
<td>4, 5</td>
</tr>
<tr>
<td></td>
<td>Up to 600A maximum</td>
<td>Are CH, CHB, F, and C-frames and are in a single cutout measuring 14.25 inches (362.0 mm) across</td>
<td>PH</td>
<td>6–8</td>
</tr>
<tr>
<td></td>
<td>Up to 225A maximum</td>
<td>Are in two vertical cutouts measuring 14.25 inches (362.0 mm) across, are F-Frame, and have breakers with black handles</td>
<td>PH-L NFB</td>
<td>9, 10</td>
</tr>
<tr>
<td>26.00 (660.4)</td>
<td>Up to 800A maximum</td>
<td>Are CH, CHB, F and C-frames and are in a single cutout measuring 14.25 inches (362.0 mm) across</td>
<td>PH</td>
<td>6–8</td>
</tr>
<tr>
<td>30.00 (762.0), 42.00 (1066.8)</td>
<td>Up to 1200A main breaker or fusible switch or 1200A MLO</td>
<td>Circuit breakers or fusible switches do not have metal side flanges. Circuit breaker covers are attached to the trim</td>
<td>EP ES</td>
<td>11–16</td>
</tr>
<tr>
<td>30.00 (762.0), 39.00 (995.2)</td>
<td>Up to 1200A main breaker or fusible switch or 1600A MLO</td>
<td>F-Frame through L-Frame are twin-mounted horizontal with center cover between breakers Fusible switches are labeled M50 30A through 1200A</td>
<td>NFB CDP MP40</td>
<td>17–20</td>
</tr>
</tbody>
</table>

Notes:
- 21.00-inch (533.4 mm) width.
- 26.50-inch (673.1 mm)–36.00-inch (914.4 mm) width.
PB panelboards

Table 2. Type PB Panelboard Trims and Deadfront Covers—Dimensions in Inches (mm)

<table>
<thead>
<tr>
<th>Maximum Pole Space</th>
<th>Main Amperes</th>
<th>Box Height</th>
<th>Deadfront Cover Kit Part Number</th>
<th>Box Height</th>
<th>Deadfront Cover Kit Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Indoor 15.00 (381.0) Wide</td>
<td></td>
<td>Indoor 21.00 (533.4) Wide</td>
<td></td>
</tr>
<tr>
<td>Main Lugs Only—Single-Phase, Three-Wire</td>
<td>18</td>
<td>125</td>
<td>29.00 (736.6)</td>
<td>99-3613-5</td>
<td>34.00 (863.6)</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>225</td>
<td>34.00 (863.6)</td>
<td>PW30KT1NB</td>
<td></td>
</tr>
<tr>
<td></td>
<td>42</td>
<td>225</td>
<td>38.00 (965.2)</td>
<td>99-3613-20</td>
<td>38.00 (965.2)</td>
</tr>
<tr>
<td></td>
<td>42</td>
<td>400</td>
<td>——</td>
<td>——</td>
<td>54.00 (1371.6)</td>
</tr>
<tr>
<td>Main Breaker—Single-Phase, Three-Wire</td>
<td>18</td>
<td>100</td>
<td>34.00 (863.6)</td>
<td>99-3613-22</td>
<td>34.00 (863.6)</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>150</td>
<td>42.00 (1066.8)</td>
<td>PW42KT1NB</td>
<td></td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>255</td>
<td>42.00 (1066.8)</td>
<td>PW42KT1NB</td>
<td></td>
</tr>
<tr>
<td></td>
<td>42</td>
<td>225</td>
<td>48.00 (1219.2)</td>
<td>39-3613-16</td>
<td>50.00 (1270.0)</td>
</tr>
<tr>
<td></td>
<td>42</td>
<td>400</td>
<td>——</td>
<td>——</td>
<td>63.00 (1600.2)</td>
</tr>
<tr>
<td>Main Lugs Only—Three-Phase, Four-Wire</td>
<td>18</td>
<td>125</td>
<td>29.00 (736.6)</td>
<td>99-3613-11</td>
<td>30.00 (762.0)</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>125</td>
<td>29.00 (736.6)</td>
<td>99-3613-17</td>
<td>34.00 (863.6)</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>225</td>
<td>34.00 (863.6)</td>
<td>99-3613-27</td>
<td>38.00 (965.2)</td>
</tr>
<tr>
<td></td>
<td>42</td>
<td>225</td>
<td>38.00 (965.2)</td>
<td>39-3613-16</td>
<td>50.00 (1270.0)</td>
</tr>
<tr>
<td></td>
<td>42</td>
<td>400</td>
<td>——</td>
<td>——</td>
<td>63.00 (1600.2)</td>
</tr>
<tr>
<td>Main Breaker—Three-Phase, Four-Wire</td>
<td>18</td>
<td>100</td>
<td>34.00 (863.6)</td>
<td>99-3613-13</td>
<td>34.00 (863.6)</td>
</tr>
<tr>
<td></td>
<td>24</td>
<td>100</td>
<td>34.00 (863.6)</td>
<td>99-3613-30</td>
<td>34.00 (863.6)</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>150</td>
<td>42.00 (1066.8)</td>
<td>PW42KT1NB</td>
<td></td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>225</td>
<td>42.00 (1066.8)</td>
<td>PW42KT1NB</td>
<td></td>
</tr>
<tr>
<td></td>
<td>42</td>
<td>225</td>
<td>48.00 (1219.2)</td>
<td>39-3613-16</td>
<td>50.00 (1270.0)</td>
</tr>
<tr>
<td></td>
<td>42</td>
<td>400</td>
<td>——</td>
<td>——</td>
<td>63.00 (1600.2)</td>
</tr>
</tbody>
</table>

(1) Contact the Aftermarket Product Center in Sumter, SC, at 803-481-6677.

PB accessories

Table 3. Filler Plate

<table>
<thead>
<tr>
<th>Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filler plate</td>
<td>CH9CP</td>
</tr>
</tbody>
</table>

© Contact the Aftermarket Product Center in Sumter, SC, at 803-481-6677.
PH panelboards

- Neutral
- Ground Bar
- Branch Breakers
- Branch Breakers
- Breaker Cover Plates
- Box
- Main Breaker
- UL Label
- Deadfront Covers
- Blank Filler Plates
- Label (Panelboard Type)
- Circuit Breaker Directory
- Trim Lock
- Trim
- Trim Lock
“B” space increments

Type PH panelboards are divided vertically into “B” space increments, each occupying four normal pole spaces for single-phase panels or six pole spaces in a three-phase panel. All circuit breakers mounted in one “B” space must be in the same family type (EHD, F-Frame, and CC, CCH, CHH). Each kit consists of a breaker, connectors, installation instructions, and a deadfront panel cover plate to mount all breakers in a single “B” space increment. Order one retrofit kit for each “B” space increment or a filler plate to cover unused “B” spaces.

PH breaker retrofit kits

A retrofit kit includes one breaker and all the associated parts required for mounting on a PH panel chassis.

Table 4. PH Panelboards

<table>
<thead>
<tr>
<th>Frame Ampere Rating</th>
<th>Breaker Frame</th>
<th>Number of Poles</th>
<th>Trip Range</th>
<th>Mounting Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>240 Vac Maximum</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>225</td>
<td>CC</td>
<td>2, 3</td>
<td>100–225</td>
<td>Single</td>
</tr>
<tr>
<td>CCH</td>
<td>2, 3</td>
<td>100–225</td>
<td>Single</td>
<td></td>
</tr>
<tr>
<td>CHH</td>
<td>2, 3</td>
<td>60–225</td>
<td>Single</td>
<td></td>
</tr>
<tr>
<td>277 Vac Maximum</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>EHD</td>
<td>1</td>
<td>15–100</td>
<td>Twin</td>
</tr>
<tr>
<td>FDB</td>
<td>1</td>
<td>15–100</td>
<td>Twin</td>
<td></td>
</tr>
<tr>
<td>FD</td>
<td>1</td>
<td>15–100</td>
<td>Twin</td>
<td></td>
</tr>
<tr>
<td>HFD</td>
<td>1</td>
<td>15–100</td>
<td>Twin</td>
<td></td>
</tr>
<tr>
<td>480 Vac Maximum</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>EHD</td>
<td>2, 3</td>
<td>15–100</td>
<td>Twin</td>
</tr>
<tr>
<td>600 Vac Maximum</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>FDB</td>
<td>2, 3</td>
<td>15–150</td>
<td>Twin</td>
</tr>
<tr>
<td>FD</td>
<td>2, 3</td>
<td>15–150</td>
<td>Twin</td>
<td></td>
</tr>
<tr>
<td>HFD</td>
<td>2, 3</td>
<td>15–150</td>
<td>Twin</td>
<td></td>
</tr>
<tr>
<td>150</td>
<td>FDB</td>
<td>2, 3</td>
<td>15–150</td>
<td>Twin</td>
</tr>
<tr>
<td>FD</td>
<td>2, 3</td>
<td>15–150</td>
<td>Twin</td>
<td></td>
</tr>
<tr>
<td>HFD</td>
<td>2, 3</td>
<td>15–150</td>
<td>Twin</td>
<td></td>
</tr>
</tbody>
</table>

How to create a retrofit kit catalog number

Use “KPH” prefix and add the catalog number of the specific breaker as shown in Table 5.

Example: The retrofit kit catalog number for a three-pole, 100A, FDB breaker is KPHFDB3100T.

Table 5. Catalog Numbering System

<table>
<thead>
<tr>
<th>KPH</th>
<th>FDB</th>
<th>3</th>
<th>100</th>
<th>T</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Designates PH Retrofit Kit</td>
<td>Breaker Frame</td>
<td>Ampere Rating</td>
<td>Mounting Type</td>
<td></td>
</tr>
<tr>
<td>Number of Poles</td>
<td>2 = Two-pole</td>
<td>3 = Three-pole</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Twin mounting indicates that only one set of connectors is required to mount two breakers (of similar frames) opposite one another. A RETROFIT KIT INCLUDES ONE BREAKER ONLY, FOR EITHER SINGLE- OR TWIN-MOUNTED APPLICATIONS. If a second breaker is required for a twin-mounting application, it must be specified as a separate item.

Must specify in notes whether this is for a single-phase panel or a three-phase panel.

EHD and F-Frame retrofit kit

Each kit includes one breaker, copper connectors for twin mounting, covers, mounting brackets, hardware, and installation instructions.

CC, CCH, CHH single unit retrofit kit

Each kit includes one breaker, copper connectors, covers, mounting brackets, hardware, and installation instructions.
Vintage Cutler-Hammer panelboards and switchboards

Renewal Parts RP01400003E
Effective February 2013

Table 6. Connector/Mounting Kits for Branch Breakers

<table>
<thead>
<tr>
<th>Branch Breaker Type</th>
<th>Volts</th>
<th>Maximum Amperes</th>
<th>Each &quot;B&quot; Space Increment</th>
<th>Number of Poles</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Single-Phase Panel</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CC, CCH, CHH</td>
<td>240</td>
<td>225</td>
<td>Occupies all four-pole spaces</td>
<td>2</td>
<td>PH2CC1</td>
</tr>
<tr>
<td><strong>Three-Phase Panel</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EHD and F-Frame</td>
<td>600</td>
<td>150</td>
<td>Any combination of single-pole, two-pole, or three-pole breakers up to a maximum of six poles</td>
<td>6</td>
<td>PH6E-3</td>
</tr>
<tr>
<td>CC, CCH, CHH</td>
<td>240</td>
<td>225</td>
<td>Occupies all six-pole spaces</td>
<td>3</td>
<td>PH3CC3</td>
</tr>
</tbody>
</table>

Note: Each kit includes copper connectors, mounting brackets, covers, hardware, and installation instructions.

- **CH, CHB connector kits are no longer available. Use F-Frame retrofit kits as listed on Page 6.**
- Maximum amperes per breaker not to exceed 150A, and maximum amperes connected to any one connector not to exceed 200A (50A–150A).
Table 7. PH Panelboard Trims and Deadfront Covers—Dimensions in Inches (mm)

<table>
<thead>
<tr>
<th>Maximum Pole Space</th>
<th>Main Amperes</th>
<th>Box Height</th>
<th>Box Height</th>
<th>Deadfront Cover Kits Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main Lugs Only—Single-Phase, Three-Wire</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>225</td>
<td>42.00 (1066.8)</td>
<td>42.00 (1066.8)</td>
<td>99-3613-14</td>
</tr>
<tr>
<td>40</td>
<td>225</td>
<td>50.00 (1270.0)</td>
<td>50.00 (1270.0)</td>
<td>99-3613-31</td>
</tr>
<tr>
<td>28</td>
<td>400</td>
<td>54.00 (1371.6)</td>
<td>54.00 (1371.6)</td>
<td>99-3613-24</td>
</tr>
<tr>
<td>40</td>
<td>400</td>
<td>63.00 (1600.2)</td>
<td>63.00 (1600.2)</td>
<td>99-3613-21</td>
</tr>
<tr>
<td>28</td>
<td>600</td>
<td>54.00 (1371.6)</td>
<td>54.00 (1371.6)</td>
<td>99-3613-21</td>
</tr>
<tr>
<td>40</td>
<td>600</td>
<td>63.00 (1600.2)</td>
<td>63.00 (1600.2)</td>
<td>99-3613-21</td>
</tr>
<tr>
<td>28</td>
<td>800</td>
<td>—</td>
<td>59.00 (1498.6)</td>
<td>99-3613-21</td>
</tr>
<tr>
<td>40</td>
<td>800</td>
<td>—</td>
<td>67.00 (1701.8)</td>
<td>99-3613-21</td>
</tr>
<tr>
<td><strong>Main Breaker—Single-Phase, Three-Wire</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>225</td>
<td>59.00 (1498.6)</td>
<td>59.00 (1498.6)</td>
<td>99-3613-21</td>
</tr>
<tr>
<td>40</td>
<td>225</td>
<td>67.00 (1701.8)</td>
<td>67.00 (1701.8)</td>
<td>99-3613-21</td>
</tr>
<tr>
<td>28</td>
<td>400</td>
<td>67.00 (1701.8)</td>
<td>67.00 (1701.8)</td>
<td>99-3613-21</td>
</tr>
<tr>
<td>40</td>
<td>400</td>
<td>75.00 (1905.0)</td>
<td>75.00 (1905.0)</td>
<td>99-3613-21</td>
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<tr>
<td>28</td>
<td>600</td>
<td>67.00 (1701.8)</td>
<td>67.00 (1701.8)</td>
<td>99-3613-21</td>
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<tr>
<td>40</td>
<td>600</td>
<td>75.00 (1905.0)</td>
<td>75.00 (1905.0)</td>
<td>99-3613-21</td>
</tr>
<tr>
<td><strong>Main Lugs Only—Three-Phase, Four-Wire</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>225</td>
<td>34.00 (863.6)</td>
<td>—</td>
<td>99-3613-2</td>
</tr>
<tr>
<td>30</td>
<td>225</td>
<td>42.00 (1066.8)</td>
<td>42.00 (1066.8)</td>
<td>99-3613-7</td>
</tr>
<tr>
<td>42</td>
<td>225</td>
<td>50.00 (1270.0)</td>
<td>50.00 (1270.0)</td>
<td>99-3613-6</td>
</tr>
<tr>
<td>30</td>
<td>400</td>
<td>54.00 (1371.6)</td>
<td>54.00 (1371.6)</td>
<td>99-3613-15</td>
</tr>
<tr>
<td>42</td>
<td>400</td>
<td>63.00 (1600.2)</td>
<td>63.00 (1600.2)</td>
<td>99-3613-15</td>
</tr>
<tr>
<td>30</td>
<td>600</td>
<td>54.00 (1371.6)</td>
<td>54.00 (1371.6)</td>
<td>99-3613-18</td>
</tr>
<tr>
<td>42</td>
<td>600</td>
<td>63.00 (1600.2)</td>
<td>63.00 (1600.2)</td>
<td>99-3613-18</td>
</tr>
<tr>
<td>30</td>
<td>800</td>
<td>—</td>
<td>59.00 (1498.6)</td>
<td>99-3613-18</td>
</tr>
<tr>
<td>42</td>
<td>800</td>
<td>—</td>
<td>67.00 (1701.8)</td>
<td>99-3613-18</td>
</tr>
<tr>
<td><strong>Main Breaker—Three-Phase, Four-Wire</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>225</td>
<td>50.00 (1270.0)</td>
<td>50.00 (1270.0)</td>
<td>99-3613-21</td>
</tr>
<tr>
<td>30</td>
<td>225</td>
<td>59.00 (1498.6)</td>
<td>59.00 (1498.6)</td>
<td>99-3613-21</td>
</tr>
<tr>
<td>42</td>
<td>225</td>
<td>67.00 (1701.8)</td>
<td>67.00 (1701.8)</td>
<td>99-3613-21</td>
</tr>
<tr>
<td>30</td>
<td>400</td>
<td>67.00 (1701.8)</td>
<td>67.00 (1701.8)</td>
<td>99-3613-21</td>
</tr>
<tr>
<td>42</td>
<td>400</td>
<td>75.00 (1905.0)</td>
<td>75.00 (1905.0)</td>
<td>99-3613-21</td>
</tr>
<tr>
<td>30</td>
<td>600</td>
<td>67.00 (1701.8)</td>
<td>67.00 (1701.8)</td>
<td>99-3613-21</td>
</tr>
<tr>
<td>42</td>
<td>600</td>
<td>75.00 (1905.0)</td>
<td>75.00 (1905.0)</td>
<td>99-3613-21</td>
</tr>
</tbody>
</table>

Table 8. Breaker Cover Plate

<table>
<thead>
<tr>
<th>Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH and CHB breakers</td>
<td>CH9CP</td>
</tr>
<tr>
<td>F- and C-Frame breakers</td>
<td>47-28266</td>
</tr>
<tr>
<td>Single-phase</td>
<td>47-28007</td>
</tr>
<tr>
<td>Three-phase</td>
<td>47-28008</td>
</tr>
</tbody>
</table>

© Contact the Aftermarket Product Center in Sumter, SC, at 803-481-6677.
PH-L panelboards and NFB panelboards—21.00 inches (533.4 mm) wide
**PH-L breaker retrofit kits**

A retrofit kit includes one breaker and all the associated parts required for mounting on a PH-L panel chassis.

**Note:** The below PH-L retrofit kits and blank filler plate will fit a 21.00-inch (533.4 mm) wide NFB panelboard.

### Table 9. PH-L Breaker Retrofit Kits

<table>
<thead>
<tr>
<th>Frame Ampere Rating</th>
<th>Breaker Frame</th>
<th>Number of Poles</th>
<th>Trip Range</th>
<th>Mounting Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>277 Vac Maximum</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>EHD</td>
<td>1</td>
<td>15–100</td>
<td>Twin</td>
</tr>
<tr>
<td></td>
<td>FDB</td>
<td>1</td>
<td>15–100</td>
<td>Twin</td>
</tr>
<tr>
<td></td>
<td>FD</td>
<td>1</td>
<td>15–100</td>
<td>Twin</td>
</tr>
<tr>
<td></td>
<td>HFD</td>
<td>1</td>
<td>15–100</td>
<td>Twin</td>
</tr>
<tr>
<td>480 Vac Maximum</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>EHD</td>
<td>2, 3</td>
<td>15–100</td>
<td>Twin</td>
</tr>
<tr>
<td>600 Vac Maximum</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>FDB</td>
<td>2, 3</td>
<td>15–100</td>
<td>Twin</td>
</tr>
<tr>
<td></td>
<td>FD</td>
<td>2, 3</td>
<td>15–100</td>
<td>Twin</td>
</tr>
<tr>
<td></td>
<td>HFD</td>
<td>2, 3</td>
<td>15–100</td>
<td>Twin</td>
</tr>
<tr>
<td>150</td>
<td>FDB</td>
<td>2, 3</td>
<td>15–150</td>
<td>Twin</td>
</tr>
<tr>
<td></td>
<td>FD</td>
<td>2, 3</td>
<td>15–150</td>
<td>Twin</td>
</tr>
<tr>
<td></td>
<td>HFD</td>
<td>2, 3</td>
<td>15–150</td>
<td>Twin</td>
</tr>
</tbody>
</table>

Note: Kit contains A, B, and C phase connectors, hardware, and instructions to twin-mount two three-pole above-listed frame breakers. Maximum amperes per breaker not to exceed 150A and maximum amperes connected to any one connector not to exceed 200A (50A–150A).

### How to create a retrofit kit catalog number

Use “KPH-L” prefix and add the catalog number of the specific breaker as shown in Table 10.

**Example:** The retrofit kit catalog number for a three-pole, 100A, FDB breaker is KPH-LFDB3100T.

### Table 10. Catalog Numbering System

```
KPH-L  FDB  3  100  T

Designates PH-L Retrofit Kit
Breaker Frame
Ampere Rating
Number of Poles
2 = Two-pole
3 = Three-pole
Mounting Type
T = Twin
```

Twin mounting indicates that only one set of connectors is required to mount two breakers (of similar frames) opposite one another. A RETROFIT KIT INCLUDES ONE BREAKER ONLY, FOR TWIN-MOUNTED APPLICATIONS. If a second breaker is required for a twin mounting application, it must be specified as a separate item.

**Deadfront cover**

Contact the Aftermarket Product Center in Sumter, SC, at 803-481-6677.

### EHD and F-Frame retrofit kit

Each kit includes one breaker, copper connectors for twin mounting, hardware, mounting brackets, and instructions. Blank filler plates are not included.

### PH-L and NFB 21.00-inch (533.4 mm) wide blank filler plate

**Table 11. PH-L and NFB 21.00-Inch (533.4 mm) Wide Blank Filler Plate**

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>21.00-inch (533.4 mm) wide blank filler plate</td>
<td>47-15718-2</td>
</tr>
</tbody>
</table>
EP panelboards and ES switchboards

- Single-Width Circuit Breaker Unit
- Single-Width Fusible Switch Unit
- Double-Width Fusible Switch Unit
- Neutral
- Ground Bar
- Box
- Dual-Mounted Unit with Two Circuit Breakers
- Single-Width Circuit Breaker Unit
- Single-Width Fusible Switch Unit
- Lug Unit
- EP Panelboard Nameplate
- Breaker Filler Plate
- Trim
Branch circuit selection of EE2 units

**Step 1:** Select the correct branch circuit device. When selecting, you need to know the following:

- Amperage
- System voltage
- Available short-circuit rating
- Number of poles
- Size and number of wires per phase
- X space required \(1X = 1.38\) inches (35.1 mm)

**Step 2:** Refer to the EP panelboard layout on Page 11 to verify the amount of X space available.

**Step 3:** Create an EE2 Unit catalog number, or order by description, by following the instructions on Page 14.

**Step 4:** Determine if extra filler covers are required. Additional filler covers may be necessary to fill the unused space. Refer to Page 16 for filler plate information.

### Table 12. Electrical Characteristics and X Space Requirements of Branch Circuit Breakers and Fusible Switches

<table>
<thead>
<tr>
<th>Circuit Breaker</th>
<th>Ampere Rating</th>
<th>Number of Poles</th>
<th>Maximum Vac</th>
<th>UL Listed Interrupting Capacities—kA Symmetrical Ampere</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>AC Rating Volts</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>240 277 480 600 125 250</td>
</tr>
<tr>
<td>EHD</td>
<td>15–100</td>
<td>1</td>
<td>277</td>
<td>—     14 — — — 10 — 3X</td>
</tr>
<tr>
<td></td>
<td>15–100</td>
<td>2, 3</td>
<td>480</td>
<td>18    14 — — — 10 3X</td>
</tr>
<tr>
<td>FDB</td>
<td>15–225</td>
<td>2, 3</td>
<td>600</td>
<td>18    — 25 — — 10 3X</td>
</tr>
<tr>
<td>FD</td>
<td>15–225</td>
<td>1</td>
<td>277</td>
<td>—     — 25 18 — 10 3X</td>
</tr>
<tr>
<td></td>
<td>15–225</td>
<td>2, 3</td>
<td>600</td>
<td>65    — 25 18 — 10 3X</td>
</tr>
<tr>
<td>HFD</td>
<td>15–225</td>
<td>1</td>
<td>277</td>
<td>—     — 65 — — 10 3X</td>
</tr>
<tr>
<td></td>
<td>15–225</td>
<td>2, 3</td>
<td>600</td>
<td>100   — 65 25 — 22 3X</td>
</tr>
<tr>
<td>FDC</td>
<td>15–225</td>
<td>2, 3</td>
<td>600</td>
<td>200   — 100 35 — 22 3X</td>
</tr>
<tr>
<td></td>
<td>15–225</td>
<td>2, 3</td>
<td>600</td>
<td>200   — 100 35 — 22 3X</td>
</tr>
<tr>
<td>JD, JDB</td>
<td>70–250</td>
<td>2, 3</td>
<td>600</td>
<td>65    — 35 18 — 10 3X</td>
</tr>
<tr>
<td>HJD</td>
<td>70–250</td>
<td>2, 3</td>
<td>600</td>
<td>100   — 65 25 — 22 3X</td>
</tr>
<tr>
<td>JDC</td>
<td>70–250</td>
<td>2, 3</td>
<td>600</td>
<td>200   — 100 35 — 22 3X</td>
</tr>
<tr>
<td>JD</td>
<td>250–400</td>
<td>2, 3</td>
<td>240</td>
<td>65    — 35 25 — 10 4X</td>
</tr>
<tr>
<td>K</td>
<td>250–400</td>
<td>2, 3</td>
<td>600</td>
<td>65    — 35 25 — 10 4X</td>
</tr>
<tr>
<td>HKD</td>
<td>100–400</td>
<td>2, 3</td>
<td>600</td>
<td>100   — 65 35 — 22 4X</td>
</tr>
<tr>
<td>KD</td>
<td>100–400</td>
<td>2, 3</td>
<td>600</td>
<td>200   — 100 50 — 22 4X</td>
</tr>
<tr>
<td>LCL</td>
<td>100–400</td>
<td>2, 3</td>
<td>600</td>
<td>200   — 200 — — 6X</td>
</tr>
<tr>
<td>LD, LDB</td>
<td>125–400</td>
<td>2, 3</td>
<td>600</td>
<td>65    — 35 25 — 22 6X</td>
</tr>
<tr>
<td>HLD</td>
<td>300–600</td>
<td>2, 3</td>
<td>600</td>
<td>100   — 65 35 — 25 6X</td>
</tr>
<tr>
<td>LDC</td>
<td>300–600</td>
<td>2, 3</td>
<td>600</td>
<td>200   — 100 50 — 25 6X</td>
</tr>
</tbody>
</table>

\(^{a}\) DC ratings apply to substantially non-inductive circuits.

\(^{b}\) DC ratings not available with electronic trip.

### Fusible switches

Fusible switches are not available. Replace with circuit breaker units from above.

---

**WARNING**

CIRCUIT BREAKER UNITS WILL NOT FIT ACROSS FROM A FUSIBLE SWITCH OR A LUG UNIT.
**EP panelboards**

“X” unit layout of circuit breaker and fusible switch units

Note: For current circuit breaker offering, refer to the cross-reference Table 24 on Page 23.

Note: Switch and breaker units may be combined without transition space in the same panel, but not horizontally opposed in double-bus interiors.

1X = 1.38 inches (35.1 mm).

---

**Figure 1. Double-Bus Interior Mounted in 42.00-Inch (1066.8 mm) or 48.00-Inch (1219.2 mm) Wide Enclosure—Dimensions in Inches (mm)**

1. Blank wireway fillers are required opposite any dual breaker unit or adapter.
2. Main device must be mounted at the neutral end of double-bus panel.
3. Single plug-on connector provided opposite the load end of wide switch unit may require staggering to balance double-bus loading.
4. May be used in 30.00-inch (762.0 mm) wide single bus interiors.

---

**Table 13. EP-Line Box Sizes and Maximum Component Unit Sizes—Dimensions in Inches (mm)**

<table>
<thead>
<tr>
<th>Box Width and Bus Type</th>
<th>Total “X” Factor</th>
<th>Box Height</th>
<th>Main Lugs</th>
<th>Branch Lugs</th>
<th>Main Breaker</th>
<th>Branch Breaker</th>
<th>Main Switch</th>
<th>Branch Fusible Switch</th>
</tr>
</thead>
<tbody>
<tr>
<td>30.00 (762.0) wide single-bus</td>
<td>2X</td>
<td>64.00 (1625.6)</td>
<td>800</td>
<td>600</td>
<td>600</td>
<td>600</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>3X</td>
<td>75.00 (1905.0)</td>
<td>800</td>
<td>600</td>
<td>600</td>
<td>600</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>4X</td>
<td>86.00 (2184.4)</td>
<td>800</td>
<td>600</td>
<td>600</td>
<td>600</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

| 42.00 (1066.8) wide double-bus | 4X | 64.00 (1625.6) | 1200 | 1200 Twin 400 Single | 800 | 800 | 600 | 600 |
| | 5X | 75.00 (1905.0) | 1200 | 1200 | 800 | 800 | 600 | 600 |
| | 6X | 86.00 (2184.4) | 1200 | 1200 | 800 | 800 | 600 | 600 |

| 48.00 (1219.2) wide double-bus | 4X | 64.00 (1625.6) | 1200 | 1200 Twin 600 Single | 1200 | 800 | 800 | 800 |
| | 5X | 75.00 (1905.0) | 1200 | 1200 | 800 | 800 | 800 | 800 |
| | 6X | 86.00 (2184.4) | 1200 | 1200 | 800 | 800 | 800 | 800 |

---

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Eaton Corporation www.eaton.com 13
EP panelboards and ES switchboards

EE circuit breaker plug-on units

A plug-on unit is a complete assembly with a circuit breaker and a mounting adapter to mount on an EP panelboard. “Single” indicates units that may be mounted in a single or double bus panel, and “twin” indicates double bus panels only.

Table 14. EE2 Circuit Breaker Plug-On Units

<table>
<thead>
<tr>
<th>Frame Ampere Rating</th>
<th>Breaker Frame</th>
<th>Trip Range</th>
<th>Mounting Type</th>
<th>Space Required Inches (mm) X Space</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>EHD 15–60</td>
<td>Single</td>
<td>4.13 (104.9) 3X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EHD 70–100</td>
<td>Single</td>
<td>4.13 (104.9) 3X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FOB 15–60</td>
<td>Single</td>
<td>4.13 (104.9) 3X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FOB 70–100</td>
<td>Single</td>
<td>4.13 (104.9) 3X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FO 15–60</td>
<td>Single</td>
<td>4.13 (104.9) 3X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FO 70–100</td>
<td>Single</td>
<td>4.13 (104.9) 3X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FHD 15–60</td>
<td>Single</td>
<td>4.13 (104.9) 3X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FHD 70–100</td>
<td>Single</td>
<td>4.13 (104.9) 3X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FDC 15–60</td>
<td>Single</td>
<td>4.13 (104.9) 3X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FDC 70–100</td>
<td>Single</td>
<td>4.13 (104.9) 3X</td>
<td></td>
</tr>
<tr>
<td>225</td>
<td>FDB 110–225</td>
<td>Single</td>
<td>4.13 (104.9) 3X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FD 110–225</td>
<td>Single</td>
<td>4.13 (104.9) 3X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FDC 110–225</td>
<td>Single</td>
<td>4.13 (104.9) 3X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ED 100–225</td>
<td>Single</td>
<td>4.13 (104.9) 3X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EDH 100–225</td>
<td>Single</td>
<td>4.13 (104.9) 3X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EDC 100–225</td>
<td>Single</td>
<td>4.13 (104.9) 3X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>JD 70–225</td>
<td>Single</td>
<td>4.13 (104.9) 3X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>HJD 70–225</td>
<td>Single</td>
<td>4.13 (104.9) 3X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>JDC 70–225</td>
<td>Single</td>
<td>4.13 (104.9) 3X</td>
<td></td>
</tr>
<tr>
<td>250</td>
<td>JD 250</td>
<td>Single</td>
<td>4.13 (104.9) 3X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>HJD 250</td>
<td>Single</td>
<td>4.13 (104.9) 3X</td>
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</tr>
<tr>
<td></td>
<td>JDC 250</td>
<td>Single</td>
<td>4.13 (104.9) 3X</td>
<td></td>
</tr>
<tr>
<td>400</td>
<td>KD 100–400</td>
<td>Single</td>
<td>5.50 (139.7) 4X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>HKD 100–400</td>
<td>Single</td>
<td>5.50 (139.7) 4X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>KDC 100–400</td>
<td>Single</td>
<td>5.50 (139.7) 4X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LCL 125–400</td>
<td>Single</td>
<td>8.25 (209.6) 6X</td>
<td></td>
</tr>
<tr>
<td>600</td>
<td>LD 300–600</td>
<td>Single</td>
<td>8.25 (209.6) 6X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>HLD 300–600</td>
<td>Single</td>
<td>8.25 (209.6) 6X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LDC 300–600</td>
<td>Single</td>
<td>8.25 (209.6) 6X</td>
<td></td>
</tr>
</tbody>
</table>

How to create an EE2 circuit breaker plug-on unit catalog number

Table 15. Catalog Numbering System

<table>
<thead>
<tr>
<th>EE</th>
<th>EHD</th>
<th>2</th>
<th>2</th>
<th>0015</th>
<th>S</th>
<th>B</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Circuit Breaker Type</td>
<td>Phasing</td>
<td>Unit Type</td>
<td>Volts</td>
<td>Amperes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M= Main</td>
<td>B= Branch</td>
<td>C= Combination</td>
<td>AC = 2</td>
<td>ABC = 3</td>
<td>ABL or BCR = 4</td>
<td>BCL or ABR = 5</td>
<td></td>
</tr>
</tbody>
</table>

Type EE2 single plug-on unit

Each single plug-on unit comes as a complete assembly with one circuit breaker mounted to an adapter. Also included is a breaker cover plate, hardware, and installation instructions.
Type ED dual plug-on units

Each dual plug-on unit comes as a complete assembly with one or two circuit breakers mounted to an adapter. Also included is a breaker cover plate, hardware, and installation instructions. A blank wireway filler plate is required when a unit is mounted in a double bus panel.

ED dual plug-on units are ordered by description.

Specify:

• The number of three-pole breakers to be mounted on each unit (maximum two)
• The breaker frame with current rating and operating voltage

Note: The available frame ratings are listed in Table 16.

<table>
<thead>
<tr>
<th>Frame Ampere Rating</th>
<th>Breaker Frame</th>
<th>Trip Range</th>
<th>Mounting Type</th>
<th>Space Required (inches (mm))</th>
<th>X Space</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>EHD</td>
<td>15–60</td>
<td>Single</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
<tr>
<td></td>
<td>EHD</td>
<td>70–100</td>
<td>Single</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
<tr>
<td></td>
<td>FDB</td>
<td>15–60</td>
<td>Single</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
<tr>
<td></td>
<td>FDB</td>
<td>70–100</td>
<td>Single</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>15–60</td>
<td>Single</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>70–100</td>
<td>Single</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
<tr>
<td></td>
<td>HFD</td>
<td>15–60</td>
<td>Single</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
<tr>
<td></td>
<td>HFD</td>
<td>70–100</td>
<td>Single</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
<tr>
<td></td>
<td>FDC</td>
<td>15–60</td>
<td>Single</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
<tr>
<td></td>
<td>FDC</td>
<td>70–100</td>
<td>Single</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
<tr>
<td>225</td>
<td>FDB</td>
<td>100–225</td>
<td>Single</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>100–225</td>
<td>Single</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
<tr>
<td></td>
<td>HFD</td>
<td>100–225</td>
<td>Single</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
<tr>
<td></td>
<td>FDC</td>
<td>100–225</td>
<td>Single</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
<tr>
<td></td>
<td>E</td>
<td>100–225</td>
<td>Single</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
<tr>
<td></td>
<td>EOH</td>
<td>100–225</td>
<td>Single</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
<tr>
<td></td>
<td>EDC</td>
<td>100–225</td>
<td>Single</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
</tbody>
</table>
## Type EE2 filler plates

**Table 17. Type EE2 Breaker Filler Plates**

<table>
<thead>
<tr>
<th>&quot;X&quot; Factor</th>
<th>Catalog Number</th>
<th>Catalog Number</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1X</td>
<td>—</td>
<td>EEFPB1S1</td>
<td>—</td>
</tr>
<tr>
<td>2X</td>
<td>EEFPB2T2</td>
<td>EEFPB2S1</td>
<td>EEFPB2S2W</td>
</tr>
<tr>
<td>3X</td>
<td>—</td>
<td>EEFPB3S2W</td>
<td>EEFPB3S2N</td>
</tr>
<tr>
<td>4X</td>
<td>EEFPB4T2</td>
<td>EEFPB4S1</td>
<td>EEFPB4S2W</td>
</tr>
<tr>
<td>5X</td>
<td>—</td>
<td>EEFPB5S1</td>
<td>EEFPB5S2W</td>
</tr>
<tr>
<td>6X</td>
<td>EEFPB6T2</td>
<td>EEFPB6S1</td>
<td>EEFPB6S2W</td>
</tr>
<tr>
<td>8X</td>
<td>EEFPB8T2</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>10X</td>
<td>EEFPB10T2</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>12X</td>
<td>EEFPB12T2</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

*2X filler is a 1X filler covering the left side and right side of a double bus interior.*

## Table 18. Type EE2 Fusible Switch Filler Plates

<table>
<thead>
<tr>
<th>&quot;X&quot; Factor</th>
<th>Catalog Number</th>
<th>Catalog Number</th>
<th>Catalog Number</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1X</td>
<td>EEFP1S2</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

*2X filler is a 1X filler covering the left side and right side of a double bus interior.*
**CDP, MP40, and NFB panelboards**

26.50–36.00-inch (673.1–914.4 mm) wide panelboards

---

**Breaker Mounting Bracket**

**Copper Connectors**

**Original F-Frame Breaker**

**Filler Plate**

**Filler Cover**

**Nameplate**

**Chassis Rail**

**Chassis Bus**

**MP40 Panelboard**
Branch circuit breaker selection

**Step 1:** Select the correct breaker. When selecting a breaker, you need to know the following:

- Amperage
- System voltage
- Available short-circuit rating
- Number of poles
- Size and number of wires per phase

**Step 2:** Use the chart on Page 19 to determine the space required.

**Step 3:** Create the retrofit kit catalog number by following the instructions on Page 19.

**Step 4:** Determine if extra filler covers are required. Additional filler covers may be necessary to fill the unused space.

### Table 19. Electrical Characteristics of Branch Circuit Breakers

<table>
<thead>
<tr>
<th>Circuit Breaker Type</th>
<th>Continuous Ampere Rating</th>
<th>Number of Poles</th>
<th>Vac</th>
<th>UL Listed Interrupting Capacities—kA Symmetrical Amperes</th>
<th>DC Rating Volts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>AC Rating</td>
<td>240</td>
</tr>
<tr>
<td>EHD</td>
<td>15–100</td>
<td>1</td>
<td>277</td>
<td>—</td>
<td>14</td>
</tr>
<tr>
<td>EHD</td>
<td>15–100</td>
<td>2, 3</td>
<td>480</td>
<td>18</td>
<td>—</td>
</tr>
<tr>
<td>ED</td>
<td>100–225</td>
<td>2, 3</td>
<td>240</td>
<td>65</td>
<td>—</td>
</tr>
<tr>
<td>EDH</td>
<td>100–225</td>
<td>2, 3</td>
<td>240</td>
<td>100</td>
<td>—</td>
</tr>
<tr>
<td>EDC</td>
<td>15–225</td>
<td>2, 3</td>
<td>240</td>
<td>200</td>
<td>—</td>
</tr>
<tr>
<td>FDB</td>
<td>15–225</td>
<td>2, 3</td>
<td>600</td>
<td>18</td>
<td>—</td>
</tr>
<tr>
<td>FD</td>
<td>15–225</td>
<td>1</td>
<td>277</td>
<td>—</td>
<td>25</td>
</tr>
<tr>
<td>FD</td>
<td>15–225</td>
<td>2, 3</td>
<td>600</td>
<td>65</td>
<td>—</td>
</tr>
<tr>
<td>HFD</td>
<td>15–225</td>
<td>1</td>
<td>277</td>
<td>—</td>
<td>65</td>
</tr>
<tr>
<td>HFD</td>
<td>15–225</td>
<td>2, 3</td>
<td>600</td>
<td>100</td>
<td>—</td>
</tr>
<tr>
<td>FDC</td>
<td>15–225</td>
<td>2, 3</td>
<td>600</td>
<td>200</td>
<td>—</td>
</tr>
<tr>
<td>CC</td>
<td>100–225</td>
<td>2, 3</td>
<td>240</td>
<td>10</td>
<td>—</td>
</tr>
<tr>
<td>COH</td>
<td>100–225</td>
<td>2, 3</td>
<td>240</td>
<td>25</td>
<td>—</td>
</tr>
<tr>
<td>CHH</td>
<td>60–225</td>
<td>2, 3</td>
<td>240</td>
<td>100</td>
<td>—</td>
</tr>
<tr>
<td>JD, JDB</td>
<td>70–250</td>
<td>2, 3</td>
<td>600</td>
<td>65</td>
<td>—</td>
</tr>
<tr>
<td>HJD</td>
<td>70–250</td>
<td>2, 3</td>
<td>600</td>
<td>100</td>
<td>—</td>
</tr>
<tr>
<td>JDC</td>
<td>70–250</td>
<td>2, 3</td>
<td>600</td>
<td>200</td>
<td>—</td>
</tr>
<tr>
<td>DK</td>
<td>250–400</td>
<td>2, 3</td>
<td>600</td>
<td>65</td>
<td>—</td>
</tr>
<tr>
<td>KD, KDB</td>
<td>100–400</td>
<td>2, 3</td>
<td>600</td>
<td>65</td>
<td>—</td>
</tr>
<tr>
<td>HKD</td>
<td>100–400</td>
<td>2, 3</td>
<td>600</td>
<td>100</td>
<td>—</td>
</tr>
<tr>
<td>KDC</td>
<td>100–400</td>
<td>2, 3</td>
<td>600</td>
<td>200</td>
<td>—</td>
</tr>
<tr>
<td>LCL</td>
<td>125–400</td>
<td>2, 3</td>
<td>480</td>
<td>200</td>
<td>—</td>
</tr>
<tr>
<td>LD</td>
<td>300–600</td>
<td>2, 3</td>
<td>600</td>
<td>65</td>
<td>—</td>
</tr>
<tr>
<td>HLD</td>
<td>300–600</td>
<td>2, 3</td>
<td>600</td>
<td>100</td>
<td>—</td>
</tr>
<tr>
<td>LDC</td>
<td>300–600</td>
<td>2, 3</td>
<td>600</td>
<td>200</td>
<td>—</td>
</tr>
<tr>
<td>MDL</td>
<td>300–800</td>
<td>2, 3</td>
<td>600</td>
<td>65</td>
<td>—</td>
</tr>
<tr>
<td>HMDL</td>
<td>300–800</td>
<td>2, 3</td>
<td>600</td>
<td>100</td>
<td>—</td>
</tr>
<tr>
<td>ND</td>
<td>600–1200</td>
<td>2, 3</td>
<td>600</td>
<td>65</td>
<td>—</td>
</tr>
<tr>
<td>HND</td>
<td>600–1200</td>
<td>2, 3</td>
<td>600</td>
<td>100</td>
<td>—</td>
</tr>
<tr>
<td>NDC</td>
<td>600–1200</td>
<td>2, 3</td>
<td>600</td>
<td>200</td>
<td>—</td>
</tr>
</tbody>
</table>

① DC ratings apply to substantially non-inductive circuits.
② Not recommended for motor loads.
③ DC ratings not available with electronic trip.
**MP40 panelboards, CDP and NFB 26.50–36.00 inches (673.1–914.4 mm) wide, MP2 switchboard chassis**

A retrofit kit includes one breaker and all the associated parts required for mounting on an MP40 or CDP panel chassis.

### Table 20. MP40 Breaker Retrofit Kits

<table>
<thead>
<tr>
<th>Frame Ampere Rating</th>
<th>Breaker Frame</th>
<th>Trip Range</th>
<th>Mounting Type</th>
<th>Space Required Inches (mm) X Space</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>EHD 15–60</td>
<td>Twin</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
<tr>
<td></td>
<td>EHD 70–100</td>
<td>Twin</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
<tr>
<td></td>
<td>FDB 15–60</td>
<td>Twin</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
<tr>
<td></td>
<td>FDB 70–100</td>
<td>Twin</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
<tr>
<td></td>
<td>FD 15–60</td>
<td>Twin</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
<tr>
<td></td>
<td>FD 70–100</td>
<td>Twin</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
<tr>
<td></td>
<td>HFD 15–60</td>
<td>Twin</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
<tr>
<td></td>
<td>HFD 70–100</td>
<td>Twin</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
<tr>
<td></td>
<td>FDC 15–60</td>
<td>Twin</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
<tr>
<td></td>
<td>FDC 70–100</td>
<td>Twin</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
<tr>
<td></td>
<td>FCL 15–100</td>
<td>Twin</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
<tr>
<td></td>
<td>FB-P 15–100</td>
<td>Twin</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
<tr>
<td>150</td>
<td>FDB 110–225</td>
<td>Twin</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
<tr>
<td></td>
<td>FD 110–225</td>
<td>Twin</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
<tr>
<td></td>
<td>HFD 110–225</td>
<td>Twin</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
<tr>
<td></td>
<td>FDC 110–225</td>
<td>Twin</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
<tr>
<td></td>
<td>ED 125–225</td>
<td>Twin</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
<tr>
<td></td>
<td>EDH 125–225</td>
<td>Twin</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
<tr>
<td></td>
<td>EDC 125–225</td>
<td>Twin</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
<tr>
<td>225</td>
<td>JD 70–225</td>
<td>Twin</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
<tr>
<td></td>
<td>JD 250</td>
<td>Twin</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
<tr>
<td></td>
<td>HJD 70–225</td>
<td>Twin</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
<tr>
<td></td>
<td>HJD 250</td>
<td>Twin</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
<tr>
<td></td>
<td>JDC 70–225</td>
<td>Twin</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
<tr>
<td></td>
<td>JDC 250</td>
<td>Twin</td>
<td>4.13 (104.9)</td>
<td>3X</td>
</tr>
<tr>
<td>250</td>
<td>KD 100–400</td>
<td>Twin</td>
<td>5.50 (139.7)</td>
<td>4X</td>
</tr>
<tr>
<td></td>
<td>HKD 100–400</td>
<td>Twin</td>
<td>5.50 (139.7)</td>
<td>4X</td>
</tr>
<tr>
<td></td>
<td>KDC 100–400</td>
<td>Twin</td>
<td>5.50 (139.7)</td>
<td>4X</td>
</tr>
<tr>
<td>400</td>
<td>LD 300–600</td>
<td>Twin</td>
<td>8.25 (209.6)</td>
<td>6X</td>
</tr>
<tr>
<td></td>
<td>HLD 300–600</td>
<td>Twin</td>
<td>8.25 (209.6)</td>
<td>6X</td>
</tr>
<tr>
<td></td>
<td>LDC 300–600</td>
<td>Twin</td>
<td>8.25 (209.6)</td>
<td>6X</td>
</tr>
<tr>
<td>600</td>
<td>MDL 400–800</td>
<td>Single</td>
<td>8.25 (209.6)</td>
<td>6X</td>
</tr>
<tr>
<td></td>
<td>HMDL 400–800</td>
<td>Single</td>
<td>8.25 (209.6)</td>
<td>6X</td>
</tr>
<tr>
<td>800</td>
<td>ND 600–1200</td>
<td>Single</td>
<td>8.25 (209.6)</td>
<td>6X</td>
</tr>
<tr>
<td></td>
<td>HND 600–1200</td>
<td>Single</td>
<td>8.25 (209.6)</td>
<td>6X</td>
</tr>
<tr>
<td>1200</td>
<td>NDC 600–1200</td>
<td>Single</td>
<td>8.25 (209.6)</td>
<td>6X</td>
</tr>
</tbody>
</table>

### How to create a retrofit kit catalog number

Use “KMP40” prefix and add the catalog number of the specific breaker as shown in Table 21.

**Example:** The retrofit kit catalog number for a three-pole, 400A, KD breaker is KMP40KD3400.

### Table 21. Catalog Numbering System

<table>
<thead>
<tr>
<th>KMP40</th>
<th>KD</th>
<th>3</th>
<th>400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Designates MP40 Connector Kit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Poles</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Twin mounting indicates that only one set of connectors is required to mount two breakers (of similar frames) opposite one another. A RETROFIT KIT INCLUDES ONE BREAKER ONLY, FOR EITHER SINGLE- OR TWIN-MOUNTED APPLICATIONS. If a second breaker is required for a twin-mounting application, it must be specified as a separate item.

**MP40 retrofit kit**

Each kit includes one breaker, copper connectors, mounting brackets, covers, hardware, and instructions.
**MP40 panelboards, MP2 switchboard chassis**

A connector kit consists of copper connectors, mounting bracket covers, hardware, and instructions for mounting breaker(s) on an MP40 or MP200 switchboard chassis. If breaker is also required, see retrofit kits shown on Page 19.

**Table 22. MP40 Breaker Connector Kits**

<table>
<thead>
<tr>
<th>Maximum Amperes</th>
<th>Breaker Frames</th>
<th>Number of Poles</th>
<th>Mounting Type</th>
<th>Space Required</th>
<th>Connector Kit Catalog Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>EHD, FDB, FD, HFD, FDC</td>
<td>2 Twin</td>
<td>2.75 (69.9)</td>
<td>2X</td>
<td>MP40KF100-2</td>
</tr>
<tr>
<td></td>
<td>EHD, FDB, FD, HFD, FDC</td>
<td>3 Twin</td>
<td>4.13 (104.9)</td>
<td>3X</td>
<td>MP40KF100-3</td>
</tr>
<tr>
<td>225</td>
<td>FDB, FD, HFD, FDC, ED, EHD, EDC</td>
<td>2 Twin</td>
<td>2.75 (69.9)</td>
<td>2X</td>
<td>MP40KF225-2</td>
</tr>
<tr>
<td></td>
<td>FDB, FD, HFD, FDC, ED, EHD, EDC</td>
<td>3 Twin</td>
<td>4.13 (104.9)</td>
<td>3X</td>
<td>MP40KF225-3</td>
</tr>
<tr>
<td></td>
<td>CC, CCH</td>
<td>2 Twin</td>
<td>2.75 (69.9)</td>
<td>2X</td>
<td>MP40KC225-2</td>
</tr>
<tr>
<td></td>
<td>CC, CCH</td>
<td>3 Twin</td>
<td>4.13 (104.9)</td>
<td>3X</td>
<td>MP40KC225-3</td>
</tr>
<tr>
<td></td>
<td>CHH</td>
<td>2 Twin</td>
<td>2.75 (69.9)</td>
<td>2X</td>
<td>MP40KCHH225-2</td>
</tr>
<tr>
<td></td>
<td>CHH</td>
<td>3 Twin</td>
<td>4.13 (104.9)</td>
<td>3X</td>
<td>MP40KCHH225-3</td>
</tr>
<tr>
<td>250</td>
<td>JD, JDB, HJD, JDC</td>
<td>3 Twin</td>
<td>4.13 (104.9)</td>
<td>3X</td>
<td>MP40JK225-3</td>
</tr>
<tr>
<td>400</td>
<td>DK, KD, KDB, HKD, KDC</td>
<td>3 Twin</td>
<td>5.50 (139.7)</td>
<td>4X</td>
<td>MP40KK400-3</td>
</tr>
<tr>
<td>600</td>
<td>LD, HLD, LDC</td>
<td>3 Twin</td>
<td>8.25 (209.6)</td>
<td>6X</td>
<td>MP40KL600-3</td>
</tr>
<tr>
<td>400</td>
<td>LCL</td>
<td>3 Single</td>
<td>8.25 (209.6)</td>
<td>6X</td>
<td>MP40KLL400-3</td>
</tr>
<tr>
<td>800</td>
<td>MDL, HM DL</td>
<td>3 Single</td>
<td>8.25 (209.6)</td>
<td>6X</td>
<td>MP40KM800-3</td>
</tr>
<tr>
<td>1200</td>
<td>ND, HND, NDC</td>
<td>3 Single</td>
<td>8.25 (209.6)</td>
<td>6X</td>
<td>MP40KN1200-3</td>
</tr>
</tbody>
</table>

Connector kits are not rated for 100 percent breakers.

**Connector kit**

Each kit includes copper connectors, mounting brackets, covers, hardware, and instructions.

**MP40 filler covers**

Filler covers are available in any increment of \(1X = 1.38\) inches (35.1 mm). Catalog number is: MP40FC\(_X\). Fill in the blank with the size. Included are cover, mounting brackets, and hardware.

**Hardware kit**

Each kit includes mounting bracket(s), filler plates, and mounting hardware ONLY. Use the appropriate connector kit catalog number and add an “H” to designate “hardware only.”

**Example:** MP40KF100-3H
**MP100 panelboards, MP2 switchboard chassis**

![MP100 Panelboard diagram](image)

- Nameplate
- Extension Wings
- Copper Connectors
- Filter Cover
- Chassis Rail
- Chassis Bus

**Vintage Cutler-Hammer panelboards and switchboards**

**Renewal Parts RP01400003E**

Effective February 2013

Eaton Corporation  
www.eaton.com
Branch M50 switch selection

Step 1: Once you know the amperage and system voltage, choose the retrofit kit catalog number from Table 23.

Step 2: Check for space requirements from Table 23.

Step 3: Determine if extra filler covers are required. Additional filler covers may be necessary to fill the unused space.

M50 Retrofit Kit

Each kit includes a switch, copper connectors, covers, hardware, and instructions.

A retrofit kit includes one switch and all hardware to mount the switch as branch devices only. For main switches, contact the Aftermarket Product Center in Sumter, SC, at 803-481-6677.

Switches up to 600A are designed for use with rejection-type fuses. For other fuse applications, contact the Sumter Aftermarket Plant.

Switches rated 800A and 1200A are designed for use with Class L fuses. Fuses are not included.

Table 23. M50 Retrofit Kits

<table>
<thead>
<tr>
<th>Switch Amperes</th>
<th>Mounting Type</th>
<th>Space Required</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Inches (mm)</td>
<td>250V</td>
</tr>
<tr>
<td>30/30</td>
<td>Twin</td>
<td>5.50 (139.7)</td>
<td>4X</td>
</tr>
<tr>
<td>60/60</td>
<td>Twin</td>
<td>5.50 (139.7)</td>
<td>4X</td>
</tr>
<tr>
<td>100/100</td>
<td>Twin</td>
<td>5.50 (139.7)</td>
<td>4X</td>
</tr>
<tr>
<td>100/100</td>
<td>Twin</td>
<td>6.88 (174.8)</td>
<td>5X</td>
</tr>
<tr>
<td>200</td>
<td>Single</td>
<td>8.25 (209.6)</td>
<td>6X</td>
</tr>
<tr>
<td>400</td>
<td>Single</td>
<td>12.38 (314.5)</td>
<td>9X</td>
</tr>
<tr>
<td>600</td>
<td>Single</td>
<td>15.13 (384.3)</td>
<td>11X</td>
</tr>
<tr>
<td>800(1)</td>
<td>Single</td>
<td>24.75 (628.7)</td>
<td>18X</td>
</tr>
<tr>
<td>1200(1)</td>
<td>Single</td>
<td>26.13 (663.7)</td>
<td>19X</td>
</tr>
</tbody>
</table>

MP100 filler covers

Filler covers are available in any increment of 1X = 1.38 inches (35.1 mm). Catalog number is: MP100FC-_X. Fill in the blank with the size. Included are cover, mounting brackets, and hardware.

MP100 Filler Covers

“Picture frame”

To permit installation of circuit breakers in an FDP panel, a “picture frame” is required. Add 2X to the breaker size for transition. Contact the Aftermarket Product Center in Sumter, SC, for technical assistance and pricing at 803-481-6677.

“Picture Frame”
Breaker cross-reference chart

Table 24. Breaker Cross-Reference Chart

<table>
<thead>
<tr>
<th>Obsolete Cutler-Hammer Circuit Breaker Frame</th>
<th>Series C Replacement Circuit Breaker Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC</td>
<td>EHD</td>
</tr>
<tr>
<td>EHC</td>
<td>FD</td>
</tr>
<tr>
<td>FS</td>
<td>FD</td>
</tr>
<tr>
<td>FC</td>
<td>FD</td>
</tr>
<tr>
<td>FH</td>
<td>HDF</td>
</tr>
<tr>
<td>FL</td>
<td>FDC</td>
</tr>
<tr>
<td>JS</td>
<td>JD, JDB</td>
</tr>
<tr>
<td>JH</td>
<td>HJD</td>
</tr>
<tr>
<td>JL</td>
<td>JDC</td>
</tr>
<tr>
<td>KS (A) 1</td>
<td>KD, KDB</td>
</tr>
<tr>
<td>KH (A) 1</td>
<td>KD</td>
</tr>
<tr>
<td>KS (D)</td>
<td>KD, KDB</td>
</tr>
<tr>
<td>KH (D)</td>
<td>KD</td>
</tr>
<tr>
<td>LS (A)</td>
<td>LD</td>
</tr>
<tr>
<td>LS (E)</td>
<td>LD</td>
</tr>
<tr>
<td>LH (A)</td>
<td>LD</td>
</tr>
<tr>
<td>LH (E)</td>
<td>LD</td>
</tr>
<tr>
<td>LL (E)</td>
<td>LDC</td>
</tr>
<tr>
<td>LS B (E)</td>
<td>LD</td>
</tr>
<tr>
<td>LH (E)</td>
<td>HLD</td>
</tr>
<tr>
<td>MS</td>
<td>MDL</td>
</tr>
<tr>
<td>NS</td>
<td>ND</td>
</tr>
<tr>
<td>NH</td>
<td>ND</td>
</tr>
</tbody>
</table>

① The Series C K-Frame family of breakers requires a TAD3 adapter kit when mounting a KD frame breaker onto existing KS (A) connectors. This adapter kit may be purchased separately for use with existing LB or KS (A) connectors.

Panelboard trim clamps

Contact the Aftermarket Product Center in Sumter, SC, for availability on styles listed below at 803-481-6677.

Table 25. Panelboard Trim Clamps

<table>
<thead>
<tr>
<th>Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Used on MP40, PWW and all door-on-door trims</td>
<td>99-970</td>
</tr>
<tr>
<td>Used on PB and PW trims</td>
<td>99-1016</td>
</tr>
</tbody>
</table>

Panelboard trim locks

As panelboard trims have been redesigned over the years, so have trim locks. Contact the Aftermarket Product Center in Sumter, SC, for availability on the styles listed below in Table 26 at 803-481-6677.

Table 26. Panelboard Trim Locks

<table>
<thead>
<tr>
<th>Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>For use on left-handed door (hinged on left side) WEN 1 key</td>
<td>K80522</td>
</tr>
<tr>
<td>For use on right-handed door (hinged on right side) WEN 1 key</td>
<td>K80133</td>
</tr>
<tr>
<td>T-Handle lock—at one time used on all trims over 48.00 inches (1219.2 mm) in height; also used on outdoor (N3R) trims. WEN 1 key</td>
<td>K80429</td>
</tr>
<tr>
<td>Used on lighting and small power panels as standard</td>
<td>1A32258H03</td>
</tr>
<tr>
<td>WEM 2 key; used on lighting and small panels as standard</td>
<td>52-2751</td>
</tr>
</tbody>
</table>